

**APPENDIX A:
DATA DICTIONARY FOR SNOQUALMIE
RIVER HABITAT CONDITIONS
INVENTORY**

Snoqualmie

UPSTREAM END OF BANK Point Feature
Menu, Required
BANK
RIGHT BANK
LEFT BANK
TYPE Menu, Required
REVTMENT
ARMORED UNKNOWN
UNARMORED
VERTICAL BULKHEAD
LEVEE
OTHER
TOE ARMOR Menu
RIP-RAP (>256mm)
RUBBLE (<256mm)
BIO-ENGINEERED
NONE
OTHER
UPPER BANK ARMOR Menu
RIP-RAP (>256mm)
RUBBLE (<256mm)
UNKNOWN
BIO-ENGINEERED
NONE
OTHER
HEIGHT Menu, Required
<5' ABOVE OHWM
5'-10' ABOVE OHWM
>10' ABOVE OHWM
SLOPE Menu, Required
STEEPER THAN 60 DEG
45 TO 60 DEG
FLATTER THAN 45 DEG
CONDITION Menu
NEW CONSTRUCTION
OLDER
NOTES Text, Maximum Length = 72

FLOODPLAIN MOD'S Point Feature
Menu, Required
BANK
RIGHT BANK
LEFT BANK
TYPE Menu, Required
PERCHED CULVERT
SUBMERGED CULVERT
MOUTH OF TRIBUTARY
MOUTH OF BACK CHAN
ADJACENT WETLAND
FLAP GATE
DIVERSIONS (PUMP)
OTHER
NOTES Text, Maximum Length = 72

CHANNEL MOD'S Point Feature
Menu, Required
BANK
RIGHT BANK
LEFT BANK
MID CHANNEL
TYPE Menu, Required
PILING
BRIDGE FOOTING
DEFLECTOR
UTILITY CROSSING
WEIR
DOCK
BARB
OTHER
NOTES Text, Maximum Length = 72

RIPARIAN VEG (100FT) Point Feature
Menu, Required
BANK
RIGHT BANK

LEFT BANK		
TREE DENSITY	Menu, Required	
NONE		
SPARSE		
MODERATE		
DENSE		
TREES	Menu	
ALL DECIDUOUS		
<5% CONIFEROUS		
5-30% CONIFEROUS		
>30% CONIFEROUS		
SHRUB DENSITY	Menu, Required	
NONE		
SPARSE		
MODERATE		
DENSE		
SHRUBS	Menu, Required	
NONE		
ALL NON-NATIVE		
NON-NATIVE DOMINANT		
NATIVE DOMINANT		
ALL NATIVE		
DOMINANT FORM	Menu, Required	
TREES		
SHRUBS		
GRASSES		
TREES AND SHRUBS		
TREES AND GRASSES		
SHRUBS AND GRASSES		
OTHER		
TREE MATURITY	Menu	
YES		
NO		
OVERHANG	Menu, Required	
NONE		
0-5 FT		
>5 FT		
NOTES	Text, Maximum Length = 72	
ACCESS POINT	Point Feature	
BANK	Menu, Required	
RIGHT BANK		
LEFT BANK		
USER	Menu, Required	
HUMAN - FOOT		
HUMAN - BOAT		
CATTLE		
VEHICLE		
NOTES	Text, Maximum Length = 72	
LWD	Point Feature	
NUMBER OF PIECES	Numeric, Decimal Places = 0	
NUMBER OF PIECES	Numeric, Decimal Places = 0	Minimum = 1, Maximum = 99, Default value
TYPE	Menu, Required	
LOG WITH ROOTWAD		
ROOTWAD ON STUMP		
CUT LOG >15 FT LONG		
DEBRIS JAM		
OTHER		
LOCATION	Menu, Required	
BELOW OHWM		
ACROSS OHWM		
ABOVE OHWM		
SPECIES	Menu, Required	
CONIFER		
DECIDUOUS		
BOTH		
UNKNOWN		
DIAMETER	Menu, Required	
1-2 FT		
2-3 FT		
>3 FT		
DOES IT FORM A POOL?	Menu, Required	
YES		

NO			
NATURALLY PLACED?	Menu, Required		
YES			
NO			
UNKNOWN			
NOTES	Text, Maximum Length = 72		
EROSION	Point Feature		
BANK	Menu, Required		
RIGHT BANK			
LEFT BANK			
TYPE	Menu, Required		
SCOUR			
SLUMP			
DUMPING			
OTHER			
MATERIAL SIZE	Menu, Required		
BOULDER (>256mm)			
COBBLE (64-256mm)			
GRAVEL (2-64mm)			
SAND (.064-2mm)			
SILT/CLAY (<.064mm)			
LENGTH IN FEET	Numeric, Decimal Places = 0		
LENGTH IN FEET	Numeric, Decimal Places = 0	Minimum = 1, Maximum = 9999, Default Va	
HEIGHT	Numeric, Decimal Places = 0		
HEIGHT	Numeric, Decimal Places = 0	Minimum = 0, Maximum = 999, Default Value	
NOTES	Text, Maximum Length = 72		
DUMPING & DISCHARGE	Point Feature		
BANK	Menu, Required		
RIGHT BANK			
LEFT BANK			
TYPE	Menu, Required		
LANDSCAPE REFUSE			
LIQUID UNKNOWN			
CAR			
TIRE			
FILL DIRT			
SEWAGE			
OTHER			
NOTES	Text, Maximum Length = 72		

APPENDIX B.
STREAM TEMPERATURE SURVEY
COVER SHEET AND FIELD SAMPLING
SITE DATA FORM



Center for Urban Water Resources Management
Department of Civil & Environmental Engineering
University of Washington, Box 352700
Seattle, WA 98195
206-543-7923

STREAM TEMPERATURE SURVEY

AUGUST 2, 2000 3-5 pm

Dear Survey-er:

Many thanks for your assistance on this year's survey. This is the third annual effort, which we are using to better characterize the temperature conditions in the region's streams and creeks. This project is being coordinated with a variety of other stream-temperature and stream-habitat studies by agencies and organizations throughout Puget Sound, and our data is being used both to identify the conditions that cause high stream temperatures and to evaluate the significance of high temperatures in comparison to other potential stresses on aquatic habitat. Some of the results from the first two years of this study can be viewed on the "RESEARCH" page of the Center's web site, <http://depts.washington.edu/cuwrml/>.

We have benefited tremendously from the experience of volunteers from the past two years, which you will see reflected in the package. You should find the following information:

1. A "COVER SHEET." This gives us contact information for you, and calibration information about your thermometer. Plan on spending about 10 minutes at your kitchen sink! The information is really important, however—from past years, we know we can trust our data to within about ½ degree C if this part is done (and if not, we really can't use it). Make sure this sheet comes back to us with your field forms.
2. A list of sites to visit. In almost all cases, we are starting with the routes from last year, minus those localities where access was difficult or impossible. We are *renumbering* all sites: the new numbers, which we would like you to record on your field form, are three letters (for the stream system) and then a number. For reference, last year's numbers are also listed—they are 2 letters (generally, the initials of last year's volunteer) followed by a number. The directions to the site (if available) are straight off of last year's field form—otherwise, just follow the map (see below).

The sites are generally listed in order of their visiting last year. It will probably work that way for you too, but if you know a better route then take it. We are again including (1) sites that may have no water, and (2) sites that you have *already* visited earlier in the route—please measure these all over again. You may also cross paths with another volunteer during the course of the 2 hours. It is part of our evaluation of data replicability, so do make independent measurements!

3. A map, courtesy of Thomas Brothers. Use it to plan your route, but if there are directions on the previous sheet, they will in most cases be more precise.
4. A "FIELD SAMPLING SITE DATA FORM," one per site. It's a little simpler than last year's; you shouldn't need more than about 3-5 minutes per site. Go for the fastest, deepest water you can reach (safely!). **BE SURE TO FILL IN THE SITE NUMBER!**

Get it all back to us, or to your coordinator, as soon after August 2nd as you can. Many thanks!

Derek Booth, CUWRM



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STREAM TEMPERATURE SURVEY

COVER SHEET

This sheet records basic information about you and about your thermometer. We'd like the information about you so that if any questions arise about your data we can reach you directly. The information about your thermometer is necessary to assign an error band to each data point—no instrument is perfect and so all results have some uncertainty. We would like to be as careful as possible in specifying that uncertainty, so that the results will be as useful as possible.

FIELD DATA COLLECTOR

Name _____

Affiliation _____

Phone number(s) _____

Fax number _____

Email address _____

Your contact person for this survey _____

INFORMATION ABOUT YOUR THERMOMETER

Type (e.g., mercury, alcohol, digital) _____

°F or °C _____

Your qualitative estimate of accuracy (e.g., "laboratory grade," "cheap," etc.) _____

Please *calibrate* your thermometer before going out to make measurements. This can be done in your kitchen in about 10 minutes. Take an ice cube tray's worth of ice cubes, empty them into a medium-sized jar, and add water so about one half of the ice cubes are covered. *Do not put in so much water that the ice starts to float!* If they do, a small pocket of dense but warmer (4 °C) water will collect at the bottom of the jar. Wait a few minutes for the ice to warm up; as long as you have both ice and water coexisting in the jar, the water temperature is fixed at the freezing point. Immerse your thermometer in the water between the ice cubes and read the temperature once it stabilizes (it should be pretty close to 0 °C or 32 °F). Record that number here, to the nearest degree (F) or ½ degree (C):

When you measure temperatures in the field, please **DO NOT** apply any correction before recording your results. Just let us know on *this* sheet how well your thermometer registers the freezing point of water.



**STREAM TEMPERATURE SURVEY
FIELD SAMPLING SITE DATA FORM**

Wednesday, August 4, 1999, 3:00-5:00 PM

Please fill out one sheet for *each* station that you visit. Remember we have not been able to visit every site beforehand, and so if you are not able to locate the exact site indicated on your map (or that site does not exist) please find and use the nearest stream crossing. In addition, if you have time and have the opportunity to make additional measurements elsewhere, please do so!

Your Name _____

Stream _____ Site Number _____ Time _____

Location (upstream of bridge at 232nd St, east of 35th Ave SW at 160th SW 103rd St, etc.):
(ALSO, WHAT IS THE NEAREST TOWN?) _____

1. Measure air temperature near stream, but not over it, and not in direct sunlight.

Air Temperature: °C or °F

2. Assess reach conditions (check one box under each heading)

Flow conditions in reach:

- ☐ Free-flowing stream
☐ Sluggish flow
☐ Intermittent flow
☐ Stagnant pool(s)
☐ No water (and so no T to measure!)

Riparian canopy extending from site
approximately 100 m upstream:

- ☐ Open, stream in full sun
☐ Partial, shrubs dominant
☐ Partial, trees dominant
☐ Closed, stream in full shade

3. Assess site where water temperature is measured (listed in order of preference)

Flow conditions:

- ☐ Swift flow
☐ Sluggish flow
☐ Stagnant

Location across channel:

- ☐ Center/deepest part of channel (i.e.,
thalweg)
☐ Along side of main current

4. Measure water temperature for 1 minute in fastest flow possible at 1/2 of the total water depth (circle units or otherwise specify). Quickly estimate the depth and speed of the flow. *EVEN IF THERE IS NO WATER, turn in this sheet for this station!*

Water Temperature (the
"sampling point"):

°C or °F

Estimate total water depth
at the sampling point
(centimeters or inches):

cm or in.

Estimate flow speed at the
sampling point (meters or
feet per second):

m/s or ft/s

Dry off thermometer after use so it is ready for the next site's air temperature reading!

Mail all completed forms to: Derek Booth, Box 352700, University of Washington,
Seattle WA 98195 or return them to your coordinator.